DOCUMENT RESUME

ED 198 934 PS 012 037

AUTHOR Takeuchi, Michio; Scott, Ralph
TITLE Learning Readiness Profiles: A Japanese-American Comparison.
PUB DATE May 81
NOTE 11p.; Paper presented at the Annual Meeting of the Japan Early Childhood Education Association (Tokyo, Japan, May 15-16, 1981).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Classification; Comparative Analysis; Concept Formation; Cross Cultural Studies; *Cultural Differences; Early Childhood Education; Foreign Countries; *Learning Readiness; *Perceptual Motor Coordination; Pilot Projects; *Vocabulary Skills; *Young Children
IDENTIFIERS Iowa Early Learning Assessment; *Japan; *Seriation

ABSTRACT

In order to understand how learning occurs in children from different cultures, the learning profiles of Japanese and American children who ranged in age from 4 to 6 was examined, using the Iowa Early Learning Assessment Instrument (IELA). After the English instructions of the IELA were translated into Japanese the IELA was sent to Japan and was administered individually to 13 males and 12 females. Results were sent to the United States where the children's performance on five subtests of the IELA (seriation, visual motor, classification, vocabulary, and concepts) was compared with norms obtained in the IELA testing of American children. Results indicated that the Japanese average scores on the seriation and visual motor subtests were higher by more than one standard deviation than those of the American children and that the Japanese scores on the classification and concepts subtests were substantially above the American average. However, on the vocabulary subtest the Japanese scores were lower than the American, particularly among girls. These results are consistent with previous findings which showed Chinese and Japanese children performing higher in mathematics than their American counterparts. (Author/MP)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

UNIVERSITY OF NORTHERN IOWA · Cedar Falls, Iowa 50614

EDUCATIONAL CLINIC
Department of Educational Psychology and Foundations
AREA 319 273-2648

ED198934

LEARNING READINESS PROFILES: A JAPANESE-AMERICAN COMPARISON

Michio Takeuchi, Kinjo Gakuin University
Ralph Scott, University of Northern Iowa

To be presented at:
Annual meeting of
Japan Early Childhood Education Association
on
May 15 and 16, 1981
in
Tokyo

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Ralph Scott
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

PS012037

A. Introduction

This study examined the learning profiles of Japanese and American children who ranged in age from four to six years. The goal was to enhance our understanding as to how cultural differences may affect learning, and thus to gain added insight into possible cross-cultural educational adaptations in enrichment efforts.

It is generally believed that people with a common cultural background will share, to a certain extent, common values and behavioral priorities which may influence the resulting pattern of motivation and intellectual abilities.[1] The subsequent profile of abilities may reveal how cultural influences raise or lower learning levels in various environmental settings. This set of assumptions has relevance to education, both within a society which is relatively monolitic, such as Japan, as well as within a society which is decidedly pluralistic, such as the United States.

Every society consists of individuals who manifest a range of demographic distinctions--social class, ordinal position, family size, rural-urban, population density--which would appear to directly impact on the

appropriateness of specific educational objectives and procedures. Eventually, however, assuming the equal worth of each individual, it is the task of educators to identify the most feasible educational objectives for each individual, regardless of the divergent background which may be represented in any instructional group. It is possible, therefore, to conduct cross-ethnic research without even considering sensitive questions as to the cultural advantage resulting from membership in one or another groups: the intent is to improve education for all children irrespective of their residence or background.

Increased awareness of individual differences, and sensitivity as to how cultural forces shape learning patterns, have promoted the recent surge of interest in cross-cultural education.[2,3] As we gather improved understanding of the diversities of environments within which children develop and grow, and how values and motivations develop to influence learning, the child's academic achievements are seen not as exclusively school-related phenomena, but rather as consequences of his/her total pre and postnatal experience. Thus, quality education requires an appreciation of, and understanding concerning, the impact of the entire life space of children, and how educational delivery systems within varied environments may be improved within the larger, usually national, educational enterprise. Increased knowledge of how divergent learning trends appear within varied cultures thus promises to foster understanding as to how successful (or unsuccessful) learning occurs within specific cultures, and how remedial adaptations may be made to support and improve instructional and compensatory strategies.

Some of the most promising cross-cultural studies have involved Oriental (China and Japan)-Caucasian comparisons. Experimentation reported by Lesser and his associates into longitudinal comparisons of Black, Anglo, Puerto Rican, Irish, Jewish and Chinese Americans revealed stronger visual motor abilities among the Chinese-American youngsters.[4,5] This, when considered in the context of Japanese-Anglo assessments summarized here, suggests that both Chinese and Japanese children may manifest similar learning trends.

As for Japanese-American populations, Lynn and Dziobon compared scores of Northern Irish children on the American Primary Mental Abilities Test, and attainments of comparable youngsters in Kyoto, Japan on the Japanese Test Kyoto NX 9.[6] Here the subjects were nine and ten year olds. Employing standard scores (mean 50, standard deviation 10), it was found that Japanese children secured an average score of 57 on a composite of spatial ability, abstract reasoning, verbal reasoning and number facility. Regrettably, the part-scores are not reported, so it is impossible to determine if there were significantly larger differences on certain subtests.

In studies of older children, the International Association for the Evaluation of Educational Achievement (IAEEA) reported that Japanese fourteen year olds solved 45.9% of the mathematics problems, while Americans correctly responded to only 23.8%.[7] Similar trends were reported with final year secondary students (31.4% vs 13.8%).[8] The significantly higher mathematics scores of Japanese children call into question some basic educational assumptions. Many American educators assume that the earliest foundations of mathematics skills lie in what Piaget has termed

seriation.[9] Piaget argued that early learning was characterized by an important interaction between seriation (visual-motor, perceptual learning) and classification (language).[10,11] A primary purpose of this research was to improve instructional methodology, so a definition of terms would appear to be useful.

In seriation, the ordering of objects is a central consideration. Young children usually learn at a relatively early age how to order by size or pattern of objects such as arranging objects from smallest to largest, or repeating the sequence of a pattern. In this context, classification includes receptive and expressive language as well as non-verbal behavior such as placing into categories all big balls or all vegetables. According to this view, cognitive growth might be compared to a vigorous badminton game, with the shuttlecock moving rapidly back and forth across the net. In the innumerable exchanges from seriation to classification, and from classification to seriation, general cognitive abilities are being developed and extended. As an example, if the child manipulates big and little objects, he may obtain a sensory and prelinguistic understanding of size differences. This is then reinforced when he groups the objects by size or hears the terms "big" and "little" used with reference to the objects. Classification thus enables the child to gain increased control over seriation learnings, which can then be employed to advance additional growth in classification skill. According to this model, general learning is impaired unless there is rich and frequent interaction of seriation and classification.

If this theory is correct, a series of seriation tasks should be significantly associated with an established classification or language type test and, for example, mathematics and reading scores should be highly correlated.

In fact, however, the Japanese scores in mathematics are so much higher that the universal applicability of educational assumption concerning the interdependency of classification and seriation require questioning. The present study compared Iowa Early Learning Assessment (IELA) scores of a small group of Japanese children with norms obtained in the IELA testing of American children. Part-scores in classification and seriation are reported to enhance their possible cross-cultural applicability.

B. Methodology and Findings

Twenty five Japanese children (13 male, 12 female; chronological age range 4 years 5 months to 6 years 4 months; a high proportion of the children came from middle to upper class homes and this introduces an apparent social class bias) were individually administered the IELA. This test has been employed for cross-cultural purposes in Germany, Poland, Sri Lanka and Taiwan, as well as with various American ethnic populations. The instrument yields part scores in five readiness areas. The first two subtests cited below (seriation, visual motor) are more heavily weighted in what Piaget has termed seriation. The last three subtests are more heavily loaded on classification types of tasks.

Seriation: Ordering of objects on the basis of size, shape or pattern

Visual-Motor: Reproducing geometric designs and segments of letters in the English alphabet and Arabic numbers, and tracing work with paper and pencil; some use of scissors

Classification: Identifying and describing functions of various objects

Vocabulary: Providing oral descriptions of a picture; defining, providing usages, and labelling objects

Concepts: Matching, identifying and naming objects on the basis of color, Arabic numbers, and English letters (On this one subtest, the range of scores rapidly narrows after children are six years old. For that reason only the scores of subjects under six years of age (7 males, 8 females) were utilized in appraisal of the Concepts subtest.)

Because the IELA was originally designed as a culture-fair instrument, and employed stimuli common across modern culture, it is believed that, with perhaps a few exceptions, the language-related objects are applicable to the Japanese setting. However, one portion of the test, Visual Motor, was modified; ten Japanese letters "hiragana" were substituted for the ten letters of the English alphabet which are used in the original IELA.

English instructions of the IELA were translated into Japanese, and results sent to the United States, where the children's performance was translated into standard scores in accordance with American norms, with controls exerted for both sex and chronological age of each child. Results are summarized below (standard score, 50; standard deviation, 10):

Table 1

IELA Scores of Japanese Children

	Male (N13)	Female (N12)
Seriation	58.5	63.7
Visual Motor	64.2	65.5
Classification	56.9	56
Vocabulary	44.6	41.7
Concepts (N7)	56.1	55.5 (N8)

Seriation is considered an early manifestation of mathematics, and these results are consistent with previous findings which found Chinese and Japanese children performing higher in mathematics than their American counterparts. In this study, the Japanese average is more than a full standard deviation higher than that of Americans on two (Seriation and Visual Motor) subtests. Sex differences are negligible except for seriation results wherein the girls did somewhat better. In two classification-related areas (Classification and Concepts), Japanese scores are substantially above the American average. However, on Vocabulary the Japanese scores are lower and particularly so with girls.

C. Summary and Discussion

This study has assumed the nature of a pilot project, and from it definitive conclusions cannot presently be drawn. This is true not only because of the low number of students but also because of the apparent social class bias. However, the findings clearly reveal that cognitive antecedents of mathematics abilities were handled by the Japanese children with great competency. It is noteworthy that the results reported here are consistent with prior investigations, conducted with older children, which reported that Japanese children perform unusually well in the visual-perceptual and mathematics areas, but encounter more difficulty on language-related tasks. The particularly low Vocabulary scores suggest that this test may be culturally biased, or that the Japanese youngsters are less skilled when tasks require contextual verbal expression. This seems to be especially true of the Japanese girls, and further research may reveal that they have more trouble expressing language than their male counterparts. Is is also noted that performance on the other classification subtests (Classification, Concepts) is higher than American norms, but lower than

the Japanese children's performance on seriation. Thus the within-Japanese profiles provide additional support for the thesis of an ethnic-related pattern such as reported by Lesser and others.

The generally, and consistently, lower verbal scores of Japanese children open for inquiry the possibility that Piagetian assumptions concerning a close intercorrelation of classification and seriation (or, generally speaking, language and perception) may be culture-bound and inapplicable to non-Western settings. According to Piaget-Inhelder formulations, language and perception are significantly interdependent as the child progressively elaborates seriation and classification competencies through the sensory-motor, preoperational and concrete operational stages.

Additional inquiry may also reveal ways in which early influences of the Japanese culture may be adapted within the West to promote early learning in the nonverbal areas, with a presumed beneficial effect in programs designed to foster academic achievement of disadvantaged children.

For example, it is possible that Japanese children receive a great deal of visual-motor training early because of their complex language and visual alphabet; they may be expected to master that difficult language with its symbol system at an early age. This may introduce a culture-wide form of enrichment which pays off in later mathematic achievements.

This may have applicability within the American school system. The junior author of this research, for example, served as consultant for the U.S. Home Start Project for over a decade. He observed that a large proportion of the children in the Project had rarely used pencils, crayons, fingerpaints or clay--materials that should strengthen visual-motor perceptual readiness and, perhaps, later mathematics competency. Thus

one of the specific findings of this research may involve the advisability of providing young American children--particularly youngsters who are culturally disadvantaged--with more seriation-type tasks. Indeed, similar forms of enrichment, perhaps of a more verbal nature, may be appropriate for Japanese youngsters reared in disadvantaging environments. Further replication studies are planned, to further test the hypotheses which have been raised during the process of conducting this research.

REFERENCES

1. Lesser, Gerald S. Cultural differences in learning and thinking styles. In S. Messick (Ed.); Individuality in learning. San Francisco: Jossey Bass, 1976, pp. 137-160.
2. Sowell, Thomas. Essays and data on American Ethnic Groups. Urban Institute, 1978.
3. Sattel, L. and Scott, R. Cross-cultural assessment of early readiness: Further adaptations of Piagetian-Gibsonian theories. Princeton, N.J.: Educational Testing Service International Newsletter, July, 1979, p. 10.
4. Lesser, G.S., Fifer, G., and Clark, D. H. Mental Abilities of Children in Different Social and Cultural Groups. Washington, D.C.: U.S. Department of Health, Education, and Welfare (Project No. 1635), 1964.
5. Stodolsky, Susan and Lesser, G. Learning Patterns in the Disadvantaged, Harvard Educational Review, Vol. 37, 1967, 546-593.
6. Lynn, Richard and Dziobon, Jenny. On the intelligence of the Japanese and other Mongoloid peoples. Person. and Ind. Diff., Vol. 1, pp. 95-96.
7. A Resume of the Surveys of the International Association for the Evaluation of Educational Achievement. Paris: Organization for Economic Cooperation and Development, January, 1974.
8. Ibid.
9. Inhelder, B. and Piaget, J. The Early Growth of Logic in the Child. New York: Harper and Row, 1964.
10. Scott, R. Social class, race, seriating and reading readiness: A study of their relationships at the kindergarten level. Journal of Genetic Psychology, 1969, 115, pp. 87-96.
11. Scott, R. Perceptual skills, general intellectual ability, race and later reading achievement. The Reading Teacher, April, 1970, pp. 660-668.